Claims

[1] A phase shifter, comprising:
an input port for receiving a radio frequency (RF) signal;
a power dividing means for dividing the RF signal into a first divided signal of which phase is to be varied and a second divided signal having a fixed phase value;
a first output port for outputting the second divided signal having the fixed phase value;
a phase shift means for dividing the first divided signal into a third divided signal and a fourth divided signal wherein the third divided signal and the fourth divided signal move in opposite directions;
a phase delay means for shifting phase of the third divided signal and the fourth divided signal based on a difference in a path length of the third divided signal and the fourth divided signal, to thereby generate phase-shifted signals; and
at least two second output ports connected to said phase delay means, for outputting the phase-shifted signals.

[2] The phase shifter as recited in claim 1, wherein said power dividing means includes:
a first induction unit electrically connected to the first output port, wherein the first induction unit is a copper plate having a semicircle shape formed on the same plane as said input port ;
a second induction unit wherein the second induction unit is a copper plate having a ring shape formed on the same plane as said phase shift means ; and
a dielectric located between the first induction unit and the second induction unit
.

[3] The phase shifter as recited in claim 2, wherein the power dividing means controls power energy of the first divided signal and the second divided signal by varying the length of the semicircular arc of the first induction unit and the size of the second induction unit.

[4] The phase shifter as recited in claim 1, wherein said phase delay means is a copper plate having a circle arc shape and is formed on the same plane as said input port; and
wherein said phase shift means varies a path length of the RF signal fed into said phase delay mean by rotating clockwise or counterclockwise about a pivot point

located on the center of the circle arc.

[5] The phase shifter as recited in claim 4, wherein the dielectric is located between said phase delay means and said phase shift means, to thereby transfer power by electromagnetic bond.

[6] The phase shifter as recited in claim 5, wherein said phase delay means includes a plurality of copper plate patterns each having a different radius formed on the same plane and an arc-shaped comb shape, and generates phase-shifted signals based on angular degrees by which said phase shift means rotates.

[7] The phase shifter as recited in claim 1, wherein the number of the second output ports is four.

[8] The phase shifter as recited in claim 1, wherein the number of the second output ports is eight.

[9] The phase shifter as recited in claim 4, wherein the phase shift means controls power energy outputted from the third divided signal and the fourth divided signal in proportion to the length and width of the phase shift means.